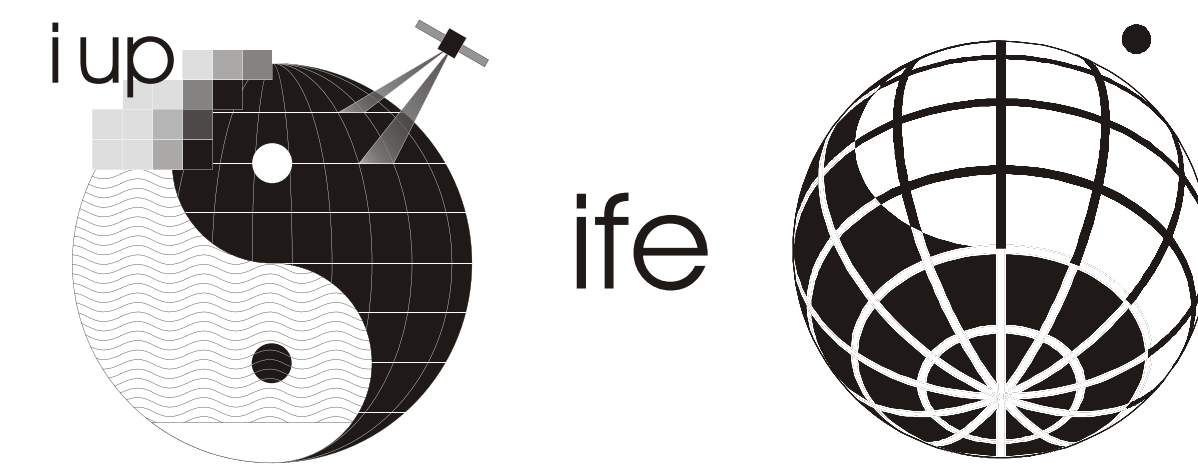


Water Vapour Retrieval from GOME and SCIAMACHY Nadir Data



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Introduction

Measurements of the Global Ozone Monitoring Experiment (GOME) on ERS-2 and the SCanning Imaging Absorption spectroMeter for Atmospheric CHartographY (SCIAMACHY) on-board the European environmental satellite ENVISAT have been used to derive water vapour total column amounts on the global scale.

For this purpose, the Air Mass Corrected Differential Absorption Spectroscopy (AMC-DOAS) approach has been applied to GOME and SCIAMACHY nadir measurements in the spectral region around 700 nm.

The AMC-DOAS method does not rely on external data sources (like radio sonde measurements). The derived water vapour columns therefore provide a completely independent data set.

Previous investigations already showed a good agreement of the water vapour columns derived from GOME and SCIAMACHY with correlative data from e. g. the Special Sensor Microwave Imager (SSM/I) and from the European Centre for Medium-Range Weather Forecasts (ECMWF).

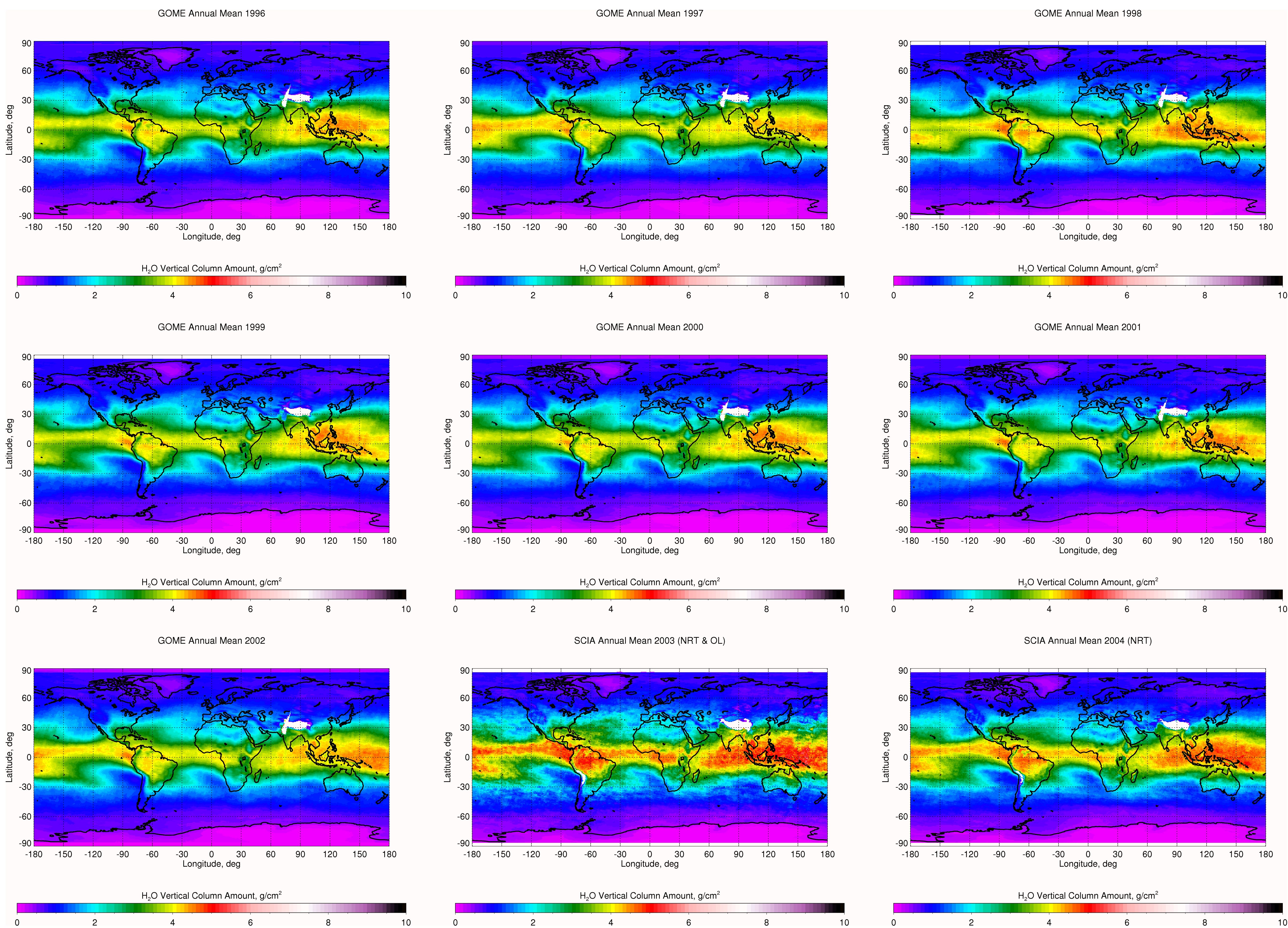
This poster presents results of an intercomparison between GOME and SCIAMACHY water vapour columns.

For the comparison, all data have been spatially gridded to $0.5^\circ \times 0.5^\circ$. Annual means have been derived from averaged monthly means.

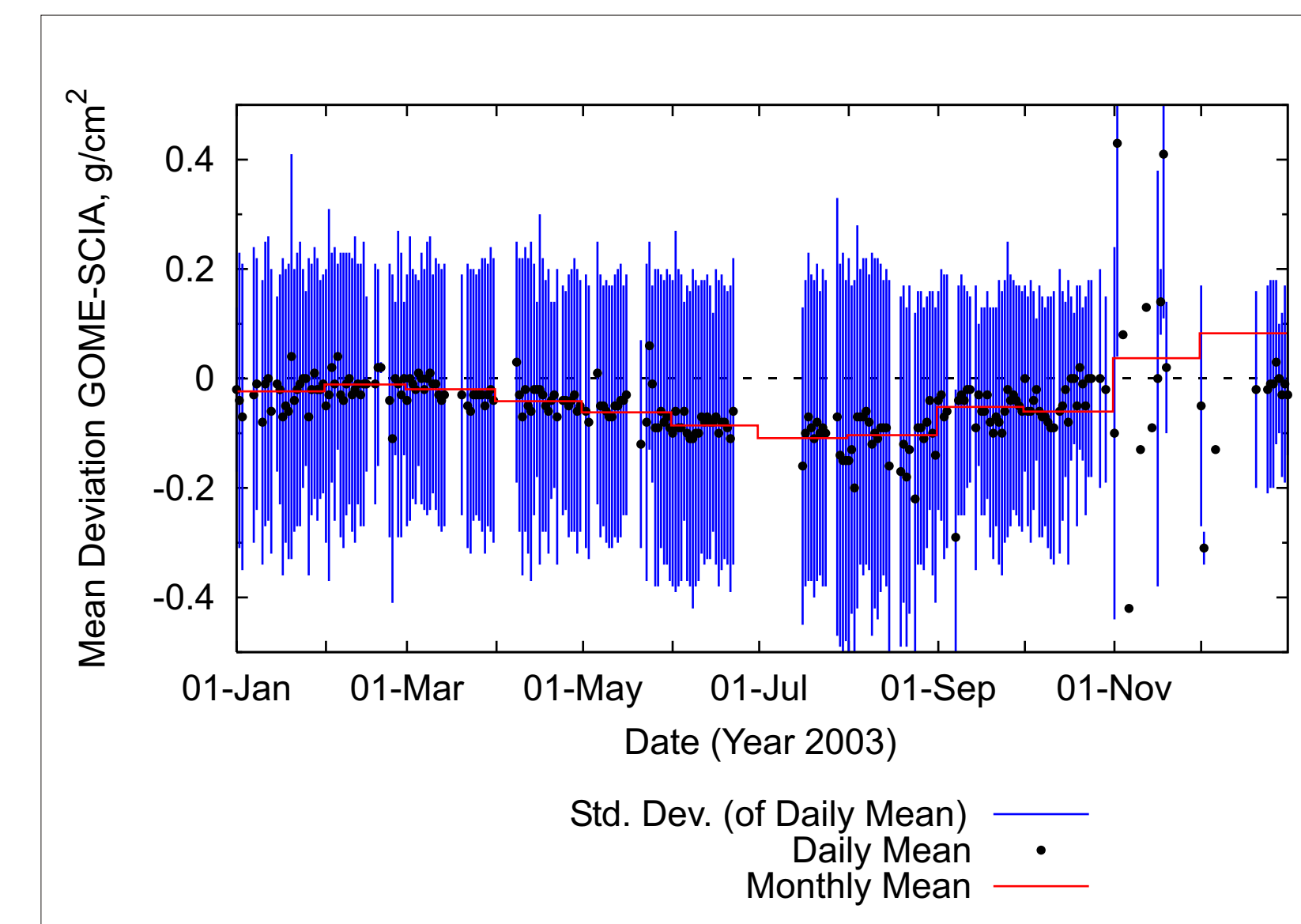
Acknowledgements

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Results



Annual means of GOME and SCIAMACHY water vapour columns from 1996 to 2004. Global GOME data are available from June 1995 to June 2003, SCIAMACHY data since August 2002. The analysis of SCIAMACHY data is on-going and currently limited by the amount and quality of available calibrated spectra.



Comparison of globally averaged GOME and SCIAMACHY water vapour total columns.

Conclusions

The trend analysis of GOME and SCIAMACHY water vapour results for the year 2003 shows a very good agreement between both data sets until about March 2003.

Because of the reduced spatial coverage of GOME measurements after June 2003 it is difficult to assess long-term trends. However, there are indications for a seasonal variation in the deviation which could be related to the reduced GOME data quality in 2003 caused by missing actual solar reference spectra.

SCIAMACHY water vapour results tend to be slightly higher than GOME data, but the derived annual means look reasonable.

Together with forthcoming instruments (like GOME-2 on MetOp) GOME and SCIAMACHY results can provide a completely new and independent global water vapour data set useful for climatological studies.

Selected References

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- (and references therein)